



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

[Signature]

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|-----------------------|------------------|
| 10/007,169 | 11/30/2001 | Jeong Ik Lee | 2013p003 | 4288 |
| 8791 | 7590 | 01/29/2004 | EXAMINER | |
| BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD, SEVENTH FLOOR LOS ANGELES, CA 90025 | | | YAMNITZKY, MARIE ROSE | |
| | | ART UNIT | | PAPER NUMBER |
| | | 1774 | | |

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|--------------------------------|------------------|
| Office Action Summary | Applicant No. | Applicant(s) |
| | 10/007,169 | LEE ET AL. |
| | Examiner Marie R. Yamnitzky | Art Unit 1774 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 31 October 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,3,4 and 6-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,3,4 and 6-10 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . | 6) <input type="checkbox"/> Other: _____ . |

1. This Office action is in response to applicants' amendment received October 31, 2003 (Paper No. 7), which amends claims 1, 3, 4, 6 and 10, and cancels claims 2 and 5.

Claims 1, 3, 4 and 6-10 are pending.

2. The rejections under 35 U.S.C. 102(b) and 35 U.S.C. 103(a) based on Kreuder et al. (5,621,131), as set forth in Paper No. 5, are overcome by applicants' amendment.

The rejection under 35 U.S.C. 112, 2nd paragraph, as set forth in Paper No. 5, is partly overcome by applicants' amendment but the amendment raises new issues as set forth below.

With respect to the previously raised issue regarding the scope of R₁ and/or R₂ as defined by claims 3 and 6, the examiner withdraws the rejection. Giving claims 3 and 6 their broadest reasonable interpretation, any of the three structures suggested by the examiner in the third paragraph on page 2 of Paper No. 5 are within the scope of these claims.

3. Claims 1, 3, 4 and 6-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 3 are incomplete because the definition of X has been deleted by applicants' amendment.

Claims 1, 3, 4 and 6-10: The definition of R₁ and R₂ is inconsistent in initially defining each of R₁ and R₂ as an alkyl group followed by the requirement that at least one of R₁ and R₂ be a polar group containing an ether bond and, in the case of claims 3, 6 and 9, requiring at least one

of R₁ and R₂ to contain multiple oxygen atoms. (Based on the original disclosure including the original claim language, the examiner suggests amending the definition of R₁ and R₂ as set forth in claims 1 and 4 to read as follows: --wherein R₁ and R₂ are identical or different and are independently a straight-chain or branched alkyl group having from 1 to 22 carbon atoms wherein the alkyl group may contain one or more oxygen atoms, provided at least one of R₁ and R₂ is a polar group containing an ether bond.--)

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3, 4 and 6-10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Rietz et al. (6,132,641).

See the whole patent. In particular, see column 1, line 5-c. 2, l. 8, c. 2, l. 16-29, c. 4, l. 42-c. 5, l. 18, c. 6, l. 47-c. 7, l. 7, c. 7, l. 58-c. 8, l. 2 and c. 9, l. 25-65.

Rietz et al. disclose fluorescent polymers of spirobisfluorene for use as a light emitting material in an electroluminescence element having the structure of a layer comprising the polymer interposed between a pair of electrodes.

The spirobisfluorene repeating units may be substituted with two R groups. Suitable R groups include R₂-(O-C_nH_{2n})_m-O- where R₂ is H or C₁-C₁₂alkyl, n is from 2 to 6 and m is from 1

to 12. $R_2-(O-C_nH_{2n})_m-O-$ where R_2 is H or C_1-C_{12} alkyl, n is from 2 to 6 and m is from 1 to 12 provides polar groups containing an ether bond and encompasses 3,6-dioxaheptyloxy (which has the formula $CH_3-(O-C_2H_4)_2-O-$) and 3,6,9-trioxadecyloxy (which has the formula $CH_3-(O-C_2H_4)_3-O-$).

The polymer can be made from a spirobisfluorene compound substituted with the two R groups and also substituted with two halogens.

Rietz's spirobisfluorene compounds and polymers are position isomers of the spirobisfluorene compounds and polymers of the present claims. Numbering the carbons of the fluorene rings in the formula shown in present claim 1 such that the X's are at positions 2 and 7, R_2 is at one of positions 1' to 4' and R_1 is at one of positions 5' to 8', Rietz's compounds represented by prior art formula (IV) as shown in column 6 are compounds in which the X's are at positions 7 and 7', and the R groups are at positions 2 and 2'. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make spirobisfluorene compounds and polymers similar to the spirobisfluorene compounds and polymers of the prior art in order to provide other fluorescent polymers that could be used for the same purposes as the prior art polymers. Position isomers are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties. *In re Wilder*, 563 F. 2d 457, 195 USPQ 426 (CCPA 1977). One of ordinary skill in the art would have reasonably expected that joining multiple spirobisfluorene units via positions 2 and 7 rather than 7 and 7' would provide polymers having properties similar to Rietz's polymers. One of ordinary skill in the art also would have reasonably expected that providing the R groups at different

positions on the spirobisfluorene structure would not destroy the light emitting properties of the polymer.

6. Applicants' arguments filed October 31, 2003 have been fully considered but they are not persuasive with respect to the rejection based on Rietz et al. (6,132,641).

The examiner respectfully disagrees with applicants' arguments regarding the need for a secondary reference to combine with Reitz's disclosure. When making a rejection under 35 U.S.C. 103(a), it is not always necessary to rely on a combination of references. A single reference may render claims unpatentable under 35 U.S.C. 103(a).

In the present case, Reitz et al. disclose spirobisfluorene compounds and polymers that are position isomers of the spirobisfluorene compounds and polymers of the present claims. As noted in the rejection, position isomers are generally of sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties. *In re Wilder*, 563 F. 2d 457, 195 USPQ 426 (CCPA 1977). A *prima facie* case of obviousness may be made when chemical compounds have close structural similarities and similar utilities. The spirobisfluorene polymers prepared from Reitz's spirobisfluorene compounds are blue-fluorescing soluble polymers, as are the spirobisfluorene polymers of the present application. Applicants have presented no objective evidence to demonstrate that the spirobisfluorene compounds and polymers of the present claims have superior/unexpected properties compared to the position isomers of the prior art.

Art Unit: 1774

7. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

The published application of Salbeck et al. (US 2003/0111107A1) is of interest as demonstrating that methods for providing substituents at different positions on a spirobisfluorene compound were known in the art at the time of the invention.

8. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes.
(Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
January 21, 2004



MARIE YAMNITZKY
PRIMARY EXAMINER

